



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO REQUESTS FOR RELIEF FIRST TEN-YEAR  
INSERVICE INSPECTION REQUIREMENTS

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

1.0 INTRODUCTION

Technical Specification 4.6 for the Vermont Yankee Nuclear Power Plant states that inservice examination of ASME Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by 10 CFR 50.55a(g) except where specific written relief has been granted by the Commission.

We have reviewed the licensee's first ten-year interval inservice inspection program plan and the requests for relief from certain requirements of the applicable ASME Code and addenda and provided a Safety Evaluation (SE) on May 19, 1983. We granted relief from the examination requirements which we determined to be impractical to perform at the Vermont Yankee Nuclear Power Plant. We also denied relief in those cases where the necessary findings could not be made.

By letter dated January 18, 1983, as Revision 7 to their first ten-year ISI program, the licensee requested additional new and revised reliefs from the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition with addenda through summer 1975. This request consists of five requests for relief, two which are new (B-10 and C-2), two which are revised versions of those previously evaluated (H-4 and H-9), and one which has been subsequently withdrawn (H-8). These requests for relief from the requirements of Section XI have been reviewed by our contractor, Science Applications International Corporation (SAIC) (Reference 1). We have reviewed the contractor's Technical Evaluation Report and adopt its evaluations and recommendations. Our evaluation is discussed below and summarized in enclosed Tables 1 and 2.

2.0 EVALUATION

2.1 Relief Request B-10, Main Steam Line Welds at Joints A4 and D4  
Category B-J, Item B4.5

ASME Boiler and Pressure Vessel Code Subsection IWB-2500, Table IWB-2500, Category B-J, "Pressure Retaining Welds in Piping", requires that volumetric examinations performed during each inspection interval shall

cover all of the area of 25% of the circumferential joints, including the adjoining 1 ft. sections of longitudinal joints and 25% of the pipe branch connection joints.

The licensee has requested relief from these requirements for welds A4 and D4 in the main steam system. Welds A4 and D4 are pipe-to-valve welds which are inspectable from the pipe side only. However, most of the weld crown and several inches of base metal on the pipe side are covered by a support ring. These rigid supports cannot be removed because the only other restraints on each line are the penetration at one end, several spring hangers and a snubber along the run, and the vessel nozzle at the other end. The licensee has stated that removal would introduce unnecessary stress into the piping and remaining support components. Five to ten percent of the weld crowns is exposed, but because the weld surface is rough, good ultrasonic testing (UT) results cannot be obtained.

As alternative examination, the licensee has proposed that these welds be visually examined for leakage during the primary coolant system hydrostatic pressure test. In addition, they are to be volumetrically examined, to the extent practical, if the support components are removed for any reason.

We have reviewed relief request B-10 and the licensee's proposed alternative examination. We agree that the support rings covering the subject welds cannot be removed without overstressing the pipe or other supports. Additionally, the condition of the limited surface area that is exposed will not allow meaningful UT results. Therefore, we conclude that the examination requirements are impractical. We also conclude that the licensee's commitment to visual examination during the hydrostatic pressure test provides reasonable assurance of the piping pressure boundary integrity. Moreover, we agree that the welds should be volumetrically examined, to the extent practical, if support components are removed for any reason, as proposed by the licensee.

## 2.2 Relief Request C-2, Fillet-Welded Pipe Attachments, Category C-E-1

### Item C2.5

ASME Boiler and Pressure Vessel Code Subsection IWC-2520 Table IWC-2520, Category C-E-1, "Support Members for Piping, Valves, and Pumps", requires that examinations performed during each inspection interval shall cover 100% of the major load bearing elements of the support structure and hangers. These elements include welds to the pressure retaining boundary.

The licensee has requested relief from the surface examination requirements on the fillet welded attachments between some Class 2 pipe and some special protection saddles. These saddles are provided to prevent damages to piping caused by excessive lateral deflection. They mainly perform a positional rather than a load bearing function. The saddles are designed to transmit those loads that do exist in a predominantly compressional mode. The licensee has stated that the saddle configuration is such that access to these welds is severely limited, and surface examination is consequently impossible or impractical.

We have reviewed relief request C-2. The configuration of these supports precludes access to most of the fillet-welded attachments. In addition, the intermittent or continuous fillet welds used to join the saddles to the pipe serve to hold them in place but do not contribute significantly to their load bearing capability. The resulting best-effort surface examinations on the accessible welds would provide negligible benefit in terms of improved plant safety. However, because these welds are points of stress concentration in the pipe membrane, it would be preferable to determine the condition of at least some of the welds. Therefore, the outermost welds at each end of each saddle should be examined.

We conclude that for the inaccessible attachment welds, the code requirements are impractical. We further conclude that the outermost welds at each end of each saddle should be code examined and all subject welds be visually examined during system pressure tests for evidence of leakage. These alternative examinations provide necessary assurance of structural reliability.

#### 2.3 Relief Request H-4

The request was revised by your January 18, 1983 submittal to correct typographical errors. The corrections were accounted for in the Technical Evaluation Report (TER) (Reference 2) enclosed in our May 19, 1983 letter. Hence, no disposition is necessary.

#### 2.4 Relief Request H-8

The request was withdrawn by your January 18, 1983 submittal. This was accounted for in the TER enclosed in our May 19, 1983 letter. Hence, no disposition is necessary.

#### 2.5 Relief Request H-9

The request was revised by your January 18, 1983 submittal to reduce the portion of the service water system involved in the request. As revised, only the return piping requires relief from pressure test requirements. However, this change does not affect the conclusions reached in the TER enclosed in our May 19, 1983 letter.

### 3.0 CONCLUSION

We conclude that relief granted from the examination and testing requirements and alternative methods imposed through this document give reasonable assurance of the piping and component pressure boundary and support structural integrity. Relief may be granted pursuant to paragraph 10 CFR 50.55a(q)(6)(i) based on our finding that certain requirements of Section XI of the ASME Boiler Pressure Vessel Code are impractical. Implementation of requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality or safety. We conclude, based on the considerations discussed above,

that the granting of this relief is authorized by law and will not endanger life or property or common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that results if the requirements were imposed on the facility.

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Dated: December 19, 1985

#### REFERENCES

1. Science Applications, Inc., Vermont Yankee Nuclear Power Station Addendum To Technical Evaluation Report Inservice Inspection Program, 186-028-24, November 1984.
2. Science Applications, Inc., Vermont Yankee Nuclear Power Station Inservice Inspection Program, Technical Evaluation Report, 186-028-24, September 2, 1982.

TABLE 1  
CLASS 1 COMPONENTS

IWB-2600 ITEM NO.	IWB-2500 EXAM. CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATIVE EXAM	RELIEF REQUEST STATUS
B4.5	B-J	Main Steam System	Circumfer- ential and longitudinal pipe welds A4 and D4	Volumetric	Visual Exam during Primary hydrostatic pressure test	Granted provided Welds are volumetric examined to extent practical if component supports are removed for any reason.

TABLE 2  
CLASS 2 COMPONENTS

IWC-2600 ITEM NO.	IWC-2520 EXAM. CAT.	SYSTEM OR COMPONENT	AREA TO BE EXAMINED	REQUIRED METHOD	LICENSEE PROPOSED ALTERNATIVE EXAM.	RELIEF REQ. STATUS
C2.5	C-E-1	Fillet Welded Pipe Attach- ments - Saddles	Integrally Welded Supports	Surface	Visual on all saddles	Granted provided that the outer most weld on each saddle is code examined and all subject welds examined visually for leakage during system pressure tests.